REMARKS

Claims 1-10 were presented for examination and, in the aforementioned Office action, were all rejected under either 35 U.S.C.§102(b) or under 35 U.S.C. §103(a) as allegedly unpatentable over various combinations of cited references. The rejections are respectfully traversed for reasons explained below. Claims 1-10 remain in the application and are presented for reexamination and reconsideration in light of these remarks.

Claims 1 and 6 were rejected under 35 U.S.C. §102(b) over Morgan et al. (US 5,329,587). All of the other grounds of rejection were also based principally on the Morgan patent. In Applicant's view, the Examiner's reliance on the Morgan patent is misplaced because it is not pertinent to the invention as claimed.

Morgan pertains to systems for active noise cancellation or adaptive noise cancellation. (See, e.g., column 1, lines 22-25, and column 2, lines 53-56.) As noted in column 1 of the patent, "(a)ctive noise control in particular involves the generation of a secondary signal (e.g., sound) for the purpose of counteracting the effect of a preexisting noise disturbance." This is also evident in FIGS. 8 and 9 referred to by the Examiner. A reference signal x(t) is generated from a microphone 48 in close proximity to a primary disturbance source 50 (i.e., a noise source). The principal of active noise cancellation is that the reference signal x(t), which is assumed to be coherent with the noise signal, is used to control a "secondary control source," a loudspeaker 45 to produce a noise-canceling acoustical signal. The combination of noise from source 50 and canceling "noise" from the loudspeaker 45 results in only a small residual noise, indicated by error signal e(t), within a zone of silence in the vicinity of a microphone 46. Thus, Morgan has only one microphone (46) positioned to detect speech. The other microphone (48) functions only to detect noise from the single noise source (50).

The present invention, by way of contrast, has nothing to do with active noise cancellation. See, e.g., Applicant's reference to noise cancellation systems in the background section of the specification, at page 2, lines 3-9. The present invention enhances signal-to-noise performance in noisy environments, but not by active noise

cancellation. Moreover, the system disclosed in the Morgan patent pertains to cancellation of a single noise source and would not work in a noisy environment having multiple noise sources.

With regard to claim 1 of the present application, Morgan does not disclose or suggest a plurality of microphones positioned to detect speech from a single speech source, and, contrary to the Examiner's assertion, does not have a plurality of adaptive filters for aligning each data microphone output signal with the output signal from the reference microphone. The process described in column 4, starting at line 49, is specific to generation of the noise cancellation signal d(t), as shown in FIG. 1. The "reference signal" x(t), which is indicative of noise, is decomposed into subband reference signals and a set of N adaptive weights is computed for each subband. This is not in the least suggestive of the aspect of the present in invention wherein signals from multiple microphones are processed by adaptive filters in order to align the signals with a common reference, so that they may be summed together in the signal summation circuit. Similarly with regard to claim 6, there is no disclosure or suggestion in Morgan of a method including the steps of positioning a plurality of microphones to detect speech from a single source and noise from multiple sources, and the other recited method steps pertaining to multiple microphones, culminating in the final step of combining microphone signals to obtain a speech signal with improved signal-to-noise performance. Accordingly, Applicant urges the Examiner to reconsider his reliance on the Morgan patent and to withdraw the rejection of claims 1 and 6 as unpatentable over Morgan.

Claims 2 and 7 were rejected under 35 U.S.C. §103(a) as unpatentable over Morgan in view of Chance et al. (US 4,584,441). The Examiner's position with regard to Chance is that it discloses speech recognition circuitry for enabling the adaptive filters only when speech is detected. Chance discloses a "large signal" detector 106, which is coupled to disable echo cancellation circuits 114 and 115 when input large signals are detected. Applicant concedes that voice detection circuits are probably available in other contexts, but believes that claims 2 and 7 should be allowable in any event, with the claims from which they depend.

Claims 3-5 and 8-10 were rejected under 35 U.S.C. §103(a) as unpatentable over Morgan in view of Torkkola (US 5,675,659). The Examiner relied on the Torkkola patent for a teaching of speech conditioning circuitry to reduce reverberation effects. The patent pertains to blind separation of signal sources. Regardless of the degree to which Torkkola pertains to the present invention, claims 3-5 and 8-10 should be allowable with the claims from which they depend, since, as discussed above, the principal reference does not disclose or suggest the invention defined by the independent claims.

In view of the foregoing, reconsideration and reexamination of the claims are respectfully requested.

Respectfully submitted,

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